



INVESTOR IN PEOPLE

The Patent Office
Concept House
Cardiff Road
Newport
South Wales
NP10 8QQ

I, the undersigned, being an officer duly authorised in accordance with Section 74(1) and (4) of the Deregulation & Contracting Out Act 1994, to sign and issue certificates on behalf of the Comptroller-General, hereby certify that annexed hereto is a true copy of the documents as originally filed in connection with the patent application identified therein.

In accordance with the Patents (Companies Re-registration) Rules 1982, if a company named in this certificate and any accompanying documents has re-registered under the Companies Act 1980 with the same name as that with which it was registered immediately before re-registration save for the substitution as, or inclusion as, the last part of the name of the words "public limited company" or their equivalents in Welsh, references to the name of the company in this certificate and any accompanying documents shall be treated as references to the name with which it is so re-registered.

In accordance with the rules, the words "public limited company" may be replaced by p.l.c., plc, P.L.C. or PLC.

Re-registration under the Companies Act does not constitute a new legal entity but merely subjects the company to certain additional company law rules.

Signed

Dated 10 March 2004

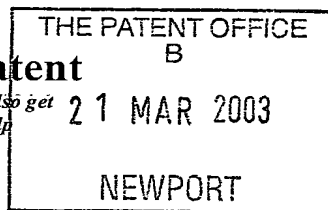
THIS PAGE BLANK (USPTO)



21MAR03 E784051-2 068800
P0123708 0.00-0306486.2

Request for grant of a patent

(See the notes on the back of this form. You can also get an explanatory leaflet from the Patent Office to help you fill in this form)



The Patent Office

Cardiff Road
Newport
Gwent
NP10 8QQ

1. Your reference

P-UK-PR1096

21 MAR 2003

2. Patent application number
(The Patent Office will fill in this part)

0306486.2

3. Full name, address and postcode of the or of each applicant (underline all surnames)

BLACK & DECKER INC
DRUMMOND PLAZA OFFICE PARK
1423 KIRKWOOD HIGHWAY
NEWARK, DELAWARE, USA

Patents ADP number (if you know it)

If the applicant is a corporate body, give the country/state of its incorporation

DELAWARE, USA

341214004

4. Title of the invention

CORDLESS HAND HELD POWER TOOL WITH POWER ACCESSORY

5. Name of your agent (if you have one)
"Address for service" in the United Kingdom to which all correspondence should be sent (including the postcode)

DARRIN M SHAYA; IAN S BELL;
MARCUS A M CAVALIER
BLACK & DECKER
PATENT DEPARTMENT
210 BATH ROAD
SLOUGH
SL1 3YD
United Kingdom

Patents ADP number (if you know it)

7570971001

~~341214004~~

6. If you are declaring priority from one or more earlier patent applications, give the country and the date of filing of the or of each of these earlier applications and (if you know it) the or each application number

Country	Priority application number (if you know it)	Date of filing (day / month / year)
---------	--	-------------------------------------

7. If this application is divided or otherwise derived from an earlier UK application, give the number and the filing date of the earlier application

Number of earlier application	Date of filing (day / month / year)
-------------------------------	-------------------------------------

8. Is a statement of inventorship and of right to grant of a patent required in support of this request? (Answer 'Yes' if:

YES

- a) any applicant named in part 3 is not an inventor, or
 - b) there is an inventor who is not named as an applicant, or
 - c) any named applicant is a corporate body.
- See note (d))

9. Enter the number of sheets for any of the following items you are filing with this form. Do not count copies of the same document

Continuation sheets of this form

Description	10
Claim(s)	4
Abstract	1
Drawing(s)	4 7

1 set Ph

10. If you are also filing any of the following, state how many against each item.

Priority documents

Translations of priority documents

Statement of inventorship and right to grant of a patent (Patents Form 7/77) 1

Request for preliminary examination and search (Patents Form 9/77)

Request for substantive examination (Patents Form 10/77)

Any other documents (please specify)

11. I/We request the grant of a patent on the basis of this application

Signature I S B U

Date: 20 March 2003

12. Name and daytime telephone number of person to contact in the United Kingdom Maureen O'Reilly 01753 500676

Warning

After an application for a patent has been filed, the Comptroller of the Patent Office will consider whether publication or communication of the invention should be prohibited or restricted under Section 22 of the Patents Act 1977. You will be informed if it is necessary to prohibit or restrict your invention in this way. Furthermore, if you live in the United Kingdom, Section 23 of the Patents Act 1977 stops you from applying for a patent abroad without first getting written permission from the Patent Office unless an application has been filed at least 6 weeks beforehand in the United Kingdom for a patent for the same invention and either no direction prohibiting publication or communication has been given, or any such direction has been revoked.

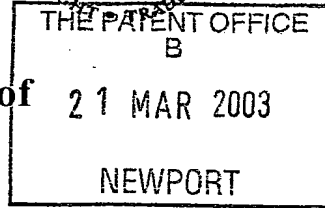
Notes

- If you need help to fill in this form or you have any questions, please contact the Patent Office on 0645 500505.
- Write your answers in capital letters using black ink or you may type them.
- If there is not enough space for all the relevant details on any part of this form, please continue on a separate sheet of paper and write "see continuation sheet" in the relevant part(s). Any continuation sheet should be attached to this form.
- If you have answered 'Yes' Patents Form 7/77 will need to be filed.
- Once you have filled in the form you must remember to sign and date it.
- For details of the fee and ways to pay please contact the Patent Office.



7/77

**Statement of inventorship and of
right to grant of a patent**



The Patent Office
Cardiff Road
Newport
Gwent
NP10 8QQ

1. Your reference

P-UK-PR1096

2. Patent application number
(if you know it)

0306486.2

21 MAR 2003

3. Full name of the or of each applicant

BLACK & DECKER INC

4. Title of the invention

CORDLESS HAND HELD POWER TOOL WITH POWER ACCESSORY

5. State how the applicant(s) derived the right
from the inventor(s) to be granted a patent

By virtue of employment and in accordance with
Section 39 of The Patents Act 1997

6. How many, if any, additional Patents Forms
7/77 are attached to this form?
(see note (c))

NONE

7. I/We believe that the person(s) named over the page (and on
any extra copies of this form) is/are the inventor(s) of the invention
which the above patent application relates to.

Signature

Date: 20 March 2003

I = Bell

8. Name and daytime telephone number of
person to contact in the United Kingdom

Maureen O'Reilly

01753 500676

Notes

- a) If you need help to fill in this form or you have any questions, please contact the Patent Office on 08459 500505.
- b) Write your answers in capital letters using black ink or you may type them.
- c) If there are more than three inventors, please write the names and addresses of the other inventors on the back of another Patents Form 7/77 and attach it to this form.
- d) When an application does not declare any priority, or declares priority from an earlier UK application, you must provide enough copies of this form so that the Patent Office can send one to each inventor who is not an applicant.
- e) Once you have filled in the form you must remember to sign and date it.

Enter the full names, addresses and postcodes of the inventors in the boxes and underline the surnames

HORST GROSSMAN
FLIEDERWEG 10
65597 HUENFELDEN-KIRBERG
GERMANY

3942786002

Patents ADP number (if you know it):

Patents ADP number (if you know it):

Patents ADP number (if you know it):

Reminder

Have you signed the form?

CORDLESS HAND HELD POWER TOOL WITH POWERED ACCESSORY

The present invention relates to a powered accessory, such as a dust collection system for a hand held cordless power tool, such as a drilling and/or hammering tool. In particular the present invention relates to a system of a cordless drilling and/or hammering tool, a battery pack for powering the tool and an accessory unit, such as a dust collection unit for collecting dust generated by the tool. The present invention also relates to an accessory unit for use in such a system.

Hand held drilling and/or hammering tools are known in the art which are powered by a battery pack instead of by a mains or generator source via a cord or cable. Such battery packs are generally rechargeable and house a plurality of electrical rechargeable cells. When the battery pack is mounted on the tool a releaseable mechanical connection is formed to secure the battery pack to the tool and an electrical connection is formed to supply electrical current from the cells to the motor of the battery pack. The battery pack is periodically removed from the tool so that it can be recharged by connection to a battery charger.

Hand held drilling and/or hammering tools are also known which can be used with a dust collection unit accessory. The collection unit, may be releaseably mechanically mounted on the tool and will generally comprise a shroud for collecting dust from the region of a tool or bit of the tool, a dust collection chamber, a filter and a system for generating an airflow into and through the shroud, through the chamber and the filter. Dust and debris generated by the tool or bit of the tool will be entrained in this airflow and so will be pulled into the shroud and into the chamber. As the air passes through the filter, any dust or debris entrained within it will be deposited in the chamber.

Both the dust collection unit and battery pack can be bulky and heavy and for a dust collection accessory for a cordless tool, both require connection to the tool.

The present invention aims to provide an efficient accessory system for a hand held cordless power tool, which has optimum performance, is flexible and ergonomic.

According to a first aspect of the present invention there is provided an accessory system of a cordless hand held power tool, comprising:

the tool;

5 an accessory unit (40) comprising a separate motor for powering the unit and releasably mountable on the tool; and

a battery pack (4);

characterised in that the battery pack can be mounted on the accessory unit for powering the accessory unit and, when the accessory unit is mounted on the tool, for powering the tool via the accessory unit.

10

By using a separate motor (separate from the motor of the tool) for powering the accessory unit, optimum performance of the accessory unit can be achieved, independent of the performance characteristics of the motor of the tool. The system according to the present invention also provides a flexible and ergonomic system for
15 powering the tool and/or the accessory unit. The battery pack can be releasably mounted on the tool or can be separately releasably mounted on the accessory unit, so as to power the tool only when the accessory unit is not required or so as to power the tool and the accessory unit attached to the tool, when the accessory is required.

20 The tool will generally include a switch for actuating the motor of the tool and this switch may be arranged such that when the battery pack is mounted on the accessory unit and when the accessory unit is mounted on the tool, depression of the switch actuates power supply to the motor of the tool and to the motor of the accessory unit. Alternatively, the accessory unit may be actuated by a separate
25 switch on the unit.

According to a preferred embodiment the tool may comprise a common mechanical and electrical interface via which the battery pack can be mounted on and electrically connected to the hammer or via which the accessory unit can be
30 mounted on and electrically connected to the hammer. Similarly, the battery pack preferably comprises a common mechanical and electrical interface via which it can be mounted on and electrically connected to the accessory unit or via which it can be mounted on and electrically connected to the tool. The mechanical and electrical

interfaces may advantageously comprise a rail and groove connection and a releaseable latch arrangement.

5 In a preferred embodiment, the accessory unit may comprises a first electrical and mechanical interface, via which it can be mounted on and electrically connected to the tool, a second electrical and mechanical interface, via which it can be mounted on and electrically connected to the battery pack, and an electrical connection between the first and second interfaces, via which electrical current is passed from the battery pack to the tool, when the accessory unit is mounted on the tool and the
10 battery pack is mounted on the accessory unit.

The accessory unit may be a dust collection unit for collecting dust generated by the operation of the tool.

15 In a preferred embodiment, the dust collection unit includes a fan and the motor of the unit powers the fan so as to generate an optimum dust collecting airflow, independent of the speed of the motor of the tool. Such a dust collection unit may comprise a shroud for collecting dust from the vicinity of a tool or bit of the tool, which shroud communicates with a filter housing, incorporating a filter, such that an airflow
20 generated by the fan passes into the shroud, into the filter housing and then into the fan.

The battery pack may be mounted on the tool from a first direction with respect to a longitudinal axis of the tool and may be mounted on the accessory unit, when the
25 accessory unit is mounted on the tool, from a second different direction with respect to the axis.

According to a second aspect of the present invention there is provided an accessory unit for a cordless hand held power tool which is releasably mountable on
30 such a tool and comprises a separate motor for powering the unit, characterised in that the accessory unit comprises a first interface via which it can be mechanically and electrically connected to such a tool and a second interface via which it can be mechanically and electrically connected to a battery pack, which battery pack is for powering the motor of the accessory unit and, when the accessory unit is mounted

on such a tool, for powering such a tool via the accessory unit. Again, the motor of the accessory unit may be actuated when a tool to which the accessory unit is mounted is actuated. Also, the accessory unit may be a dust collecting unit as described above.

5

In order to power the tool from the battery pack via the dust collection unit, the accessory unit may advantageously comprise an electrical connection between the first and second interfaces, via which electrical current is passed from a battery pack to a tool, when the accessory unit is mounted on a tool and a battery pack is mounted on the accessory unit.

10

One form of cordless rotary hammer incorporating dust collection system according to the present invention will now be described by way of example with reference to the accompanying drawings in which:

15

Figure 1 shows a perspective view of a cordless rotary hammer in accordance with the present invention with a battery pack fitted to it;

Figure 2 shows a perspective view of the cordless rotary hammer of Figure 1 with the battery pack detached from it;

Figure 3A shows a rear perspective view of the battery pack of Figures 1 and 2;

20

Figure 3B shows a front perspective view of the battery pack of Figures 1 and 2;

Figure 4 shows a perspective view of a dust collection unit for the rotary hammer of Figure 1 in accordance with the present invention;

25

Figure 5 shows a perspective view of the dust collection unit of Figure 4 with the battery pack of Figures 1 to 3B fitted to it;

Figure 6 shows a perspective view of the rotary hammer of Figure 2 with the dust collection unit and battery pack sub-assembly of Figure 5 fitted to it; and

30

Figure 7 shows a circuit diagram of the wiring between the rotary hammer of Figure 1, the dust extraction unit of Figure 4 and the battery pack of Figures 3A and 3B with the battery pack fitted to the dust extraction unit and the dust extraction unit fitted to the rotary hammer, as shown in Figure 6.

The hand held cordless rotary hammer shown in the Figures has a housing comprising a motor housing portion (2) within which an electric motor (3) of the

hammer is housed. A tool holder (26) is located at the forward end of a spindle of the hammer. A tool or bit (24) can be non-rotatably and releasably fitted within the tool holder so as to allow limited reciprocation of the tool or bit with respect to the tool holder. The hammer has a rear handle (18) in which an on/off trigger (20) is located
5 for actuating a switch for actuating power supply to the motor (3). The motor of the hammer selectively drives a spindle drive mechanism for rotatingly driving the spindle of the hammer, thereby rotatingly driving the tool holder (26) and a tool or bit (24) mounted therein, as is well known in the art. Also, the motor of the hammer selectively drives an air cushion hammering mechanism for repeatedly impacting the
10 tool or bit (24), as is well known in the art. A mode change arrangement, actuated by a mode change knob (50), is provided for enabling the selective engagement of rotary drive to the spindle and/or selective actuation of the air cushion hammering mechanism so that the hammer can be operated in a drilling only mode, a hammering only mode and/or a combination rotary hammering mode, as is well
15 known in the art.

The rotary hammer is powered by a battery pack (4), of the type shown in the Figures. The battery pack comprises a housing (6) in which a number of rechargeable electrical cells (7) are housed, as is well known in the art. The housing
20 (6) has an upper sub-housing (10) which covers a portion of the upper surface of the housing (6). The sub-housing houses an electrical connection arrangement (Z) (See Figure 7) to the cells (7) of the battery pack which is accessible by via a plurality of passageways into the sub-housing (10), which passageways are separated by guide ribs (8). A recess (12) for receiving a fixing latch is formed in the upper surface of the
25 sub-housing (10) and a pair of outwardly facing rails (14) are formed to either side of the sub-housing so as to extend in the longitudinal direction of the battery pack, designated by arrow (A). A recess is formed underneath each rail, which recess is terminated by a rib (16) at a first end of the recess.

30 The battery pack (4) can be releasably mounted on the rotary hammer, as shown in Figure 1. The hammer has a lower housing portion (22) on the underside of which are formed a pair of inwardly facing rails (28) (see Figure 2) which cooperate with the outwardly facing pair of rails (14) on the battery pack, so that a sliding rail and groove connection can be formed between the battery pack (4) and

the lower housing portion (22). The forward ends of the pair of rails (28) are initially engaged with the open ends of the recesses under the rails (14) and then the battery pack is slid rearwardly with respect to the lower housing portion (22) until the open ends of the rails (14) abut a stop arrangement on the underside of the lower housing portion (22). As the rails (14) come into abutment with the stop arrangement a spring biased latch (not shown) extending downwardly from the underside of the lower housing portion (22) engages in the recess (12) in the sub-housing (10) of the battery pack (4) to thereby secure the battery pack to the lower housing portion. Also, as the battery pack (4) is moved rearwardly along the rails (28) electrical connectors (Y) (See Figure 7) on the underside of the lower housing portion (22) move into the passageways between the ribs (8) of the sub-housing (10) of the battery pack and into electrical connection with the electrical connection (Z) to the cells (7). Thereby, the motor of the hammer is electrically connected to and powered by the cells of the battery pack (4).

15

In order to remove the battery pack (4) from the lower housing portion (22), a button (30) on the side of the lower housing portion is depressed so as to retract the latch from the recess (12) in the sub-housing (10) of the battery pack (4). Thereafter, the battery pack can be moved slideably forward along the rails (28) of the lower housing portion (22) and removed completely from the lower housing portion (22), for example for charging.

20

Figures 4 to 6 show a dust collection unit (40) for the hammer. The dust collection unit comprises a dust collection shroud (32) which, when the unit (40) is mounted on the hammer (as shown in Figure 6), surrounds the forward end of a tool or bit (24) mounted in the tool holder (26) of the hammer. The shroud (32) forms a chamber around the forward end of the tool or bit (24), the rearward wall of which is formed by a flexible brush (34) which fits around the tool or bit (24). The shroud (32) is mounted on a support arm (36) which is telescopically mounted within a receiving portion (38) of a main housing of the dust collection unit (40). The support arm (36) can be pushed into the receiving portion (38) against a biasing force from a spring arrangement contained in the receiving portion (38). The maximum extent to which the support arm (36) extends forwardly of the receiving portion (38) and the extent to which the support arm can be retracted into the receiving portion can be set by the

25

30

adjustment of a pair of stops (42, 44). A channel extends along the support arm (36) with a first end of the channel communicating with the chamber of the shroud (32) and the second end of the channel communicating with an entrance to a filter chamber of the unit (40).

5

The unit (40) comprises a filter chamber, formed partially by a releasable cover (46). A filter arrangement is housed within the filter chamber. The filter chamber has an inlet which communicates with the channel in the support arm (36) and an outlet which communicates with an inlet to a fan. The fan has an outlet (48). The fan is
10 powered by a motor (49) housed in the rearward housing portion (50) of the dust collection unit (40).

The rearward housing portion (50) of the dust collection unit (40) has an upper sub-housing (52) which covers a portion of the upper surface of the housing portion
15 (50). The sub-housing houses a first electrical connection arrangement (X) which is connected to the fan motor (49) of the unit (40) and which is connected to a second electrical connection arrangement (W) for connection to a battery pack (4) (as described below) (See Figure 7). The first electrical connection arrangement (X) of the unit (40) is accessible via a plurality of passageways into the sub-housing (52),
20 which passageways are separated by guide ribs (54). A pair of outwardly facing rails (56) are formed to either side of the sub-housing so as to extend in the longitudinal direction of the unit (40), designated by arrow (B). A recess is formed underneath each rail, which recess is terminated by a rib (58) at a first forward end of the recess. The unit (40) is formed with an upwardly extending projection (60) which is
25 engageable with a correspondingly shaped recess on the underside of the housing of the hammer. The unit (40) is also provided with a rearwardly extending retractable latch (62) which is engageable with a correspondingly shaped recess of the underside of the housing of the hammer. The latch (62) can be retracted against a biasing spring arrangement by pressing a button located on the opposite side of the
30 hammer housing to that shown in the Figures.

The dust collection unit (40) can be releasably mounted on the rotary hammer, as shown in Figure 6. The pair of inwardly facing rails (28) (see Figure 2) of the hammer cooperate with the outwardly facing pair of rails (56) on the unit (40), so that

a sliding rail and groove connection can be formed between the unit (40) and the lower housing portion (22). The forward ends of the pair of rails (28) are initially engaged with the open ends of the recesses under the rails (56) and then the battery pack is slid rearwardly with respect to the lower housing portion (22) until the open ends of the rails (56) abut a stop arrangement on the underside of the lower housing portion (22). As the rails (56) come into abutment with the stop arrangement, the projection (60) can be moved upwardly into engagement with the corresponding recess on the hammer housing and the latch (62) engages in the corresponding the recess in the housing of the hammer to thereby secure the unit (40) to the hammer housing. Also, as the unit (40) is moved rearwardly along the rails (28) electrical connectors (Y) on the underside of the lower housing portion (22) move into the passageways between the ribs (54) of the sub-housing (52) of the unit (40) and into electrical connection with the first electrical connection arrangement (X) and thus into connection with the fan motor (49) and with the second electrical connection arrangement (W) for connection to a battery pack (4) (See Figure 7).

In order to remove the unit (40) from the housing of the hammer, the button on the dust collection unit (40) is depressed so as to retract the latch (62) from the corresponding recess (12) in the hammer housing. Thereafter, the unit (40) can be tilted downwardly to release the projection (60) from its corresponding recess in the hammer housing and then the unit (40) can be moved slideably forward along the rails (28) of the lower housing portion (22) and removed completely from the lower housing portion (22).

The fan motor (49) of unit (40) and the motor (3) of the hammer can both be powered by a battery pack (4), of the type described above. The battery pack (4) can be fitted to the unit (40) so as to power the fan motor of the unit and power the motor of the hammer via the unit.

The dust collection unit (40) has a rearward housing portion (50) on the underside of which are formed a pair of inwardly facing rails (64) (see Figure 4) which cooperate with the outwardly facing pair of rails (14) on the battery pack, so that a sliding rail and groove connection can be formed between the battery pack (4) and the rearward housing portion (50). The rearward ends of the pair of rails (64) are

initially engaged with the open ends of the recesses under the rails (14) and then the battery pack is slid forwardly with respect to the rearward housing portion (50) until the open ends of the rails (14) abut a stop arrangement on the underside of the rearward housing portion (50). As the rails (14) come into abutment with the stop arrangement a spring biased latch (not shown) extending downwardly from the underside of the rearward housing portion (50) engages in the recess (12) in the sub-housing (10) of the battery pack (4) to thereby secure the battery pack to the rearward housing portion of the dust collection unit (40). Also, as the battery pack (4) is moved forwardly along the rails (28) the second electrical connection arrangement (W) on the underside of the rearward housing portion (50) of the dust collection unit (40) moves into the passageways between the ribs (8) of the sub-housing (10) of the battery pack and into electrical connection with the electrical connection (Z) to the cells. Thereby, the fan motor (49) of the dust collection unit (40) is electrically connected to and powered by the cells (7) of the battery pack (4). There is also an electrical connection between the second electrical connection arrangement (W) on the underside of the rearward housing portion (50) and the first electrical connection arrangement (X) of the sub-housing (52) of the housing portion (50), via which the motor (3) of the hammer is powered, when the dust collection unit is fitted on the hammer, as shown in Figure 6. The circuit diagram showing the wiring between the battery pack (4), the dust extraction unit (40) and the rotary hammer is shown in Figure 7.

In order to remove the battery pack (4) from the rearward housing portion (50) of the dust extraction unit (40), a button (66) on the side of the rearward housing portion is depressed so as to retract the latch from the recess (12) in the sub-housing (10) of the battery pack (4). Thereafter, the battery pack can be moved slideably rearward along the rails (64) of the rearward housing portion (50) and removed completely from the lower housing portion (22), for example for charging.

Thus, in order to use the hammer without the dust collection unit (40), the battery pack (4) is fitted to the hammer as shown in Figure 1. The battery pack (4) can be removed from the hammer, as shown in Figure 2, for re-charging of the battery pack.

In order to use the hammer with the dust collection unit (40) the battery pack is removed forwardly from the hammer, and the dust extraction unit is fitted to the hammer, as described above. The battery pack (4) is turned through 180° and mounted on the dust extraction unit (40) from the rearward direction. The resulting configuration is shown in Figure 6. Then the shroud is adjusted, according to the length of the tool or bit (24), by adjusting the stops (42, 44) so that the chamber of the shroud (32) surrounds the forwardmost portion of the tool or bit so that when the tool or bit is pressed against a surface to be worked on, the forwardmost rim of the shroud (32) abuts the surface. Then when the motor (3) of the hammer is actuated, by depressing the trigger (20) of the hammer, the cells (7) of the battery pack (4) power the motor (3) of the hammer via the connections (ZW) and (XY) through the dust collection unit (40) and power the fan motor (49) of the dust collection unit (40). The tool or bit (24) is pressed against the surface and dust is generated.

The motor fan generates an airflow which is pulled into the shroud, for example via one or more recesses in the forward face of the rim of the shroud (32), and from the shroud through the channel in the support arm (36) and into the inlet to the filter housing. The generated dust is entrained in this airflow and thus transported into the filter housing. The dust is captured in the filter housing by a filter arrangement and the air passes through the filter and into the inlet of the fan. The air passes through the fan and is discharged out of the outlet (48) to the fan. Periodically, the filter housing cover (46) can be removed and the filter housing emptied of collected dust. As the tool or bit (24) moves into the surface being worked, the support arm (36) retracts against the biasing force of the spring arrangement and maintains the forwardmost rim of the shroud against the surface being worked. When the trigger (20) of the hammer is released, the power to the hammer motor and the fan motor is disconnected.

CLAIMS

1. An accessory system of a cordless hand held power tool, comprising:
the tool;
an accessory unit (40) comprising a separate motor (49) for powering the unit,
which accessory unit is releasably mountable on the tool; and
5 a battery pack (4);
characterised in that the battery pack can be mounted on the accessory unit for
powering the accessory unit and, when the accessory unit is mounted on the tool, for
powering the tool via the accessory unit.
- 10 2. An accessory system according to claim 1 wherein the battery pack (4) can be
releasably mounted on the tool or can be separately releasably mounted on the
accessory unit.
3. An accessory system according to claim 1 or claim 2 wherein the tool includes
15 a switch for actuating the motor of the tool arranged such that when the battery pack
is mounted on the accessory unit and when the accessory unit is mounted on the
tool, depression of the switch actuates power supply to the motor of the tool and to
the motor of the accessory unit.
- 20 4. An accessory system according to any one of the preceding claims wherein the
tool comprises a common mechanical and electrical interface (28) via which the
battery pack (4) is mounted on and electrically connected to the tool or via which the
accessory unit (40) is mounted on and electrically connected to the tool.
- 25 5. An accessory system according to claim 4 wherein the mechanical and
electrical interface comprises a rail and groove connection (28) and releasable latch
arrangement.
6. An accessory system according to any one of the preceding claims wherein the
30 battery pack (4) comprises a common mechanical and electrical interface (12, 14, 16)
via which it is mounted on and electrically connected to the accessory unit (40) or via
which it is mounted on and electrically connected to the tool.

7. An accessory system according to claim 6 wherein the mechanical and electrical interface comprises a rail and groove connection (14) and a releaseable latch arrangement (10).

5 8. An accessory system according to any one of the preceding claims wherein the accessory unit comprises a first electrical and mechanical interface (56, X), via which it is mounted on and electrically connected to the tool and a second electrical and mechanical interface (64, W), via which it is mounted on and electrically connected to the battery pack (4) and an electrical connection (XW) between the first and second
10 interfaces, via which electrical current is passed from the battery pack to the tool, when the accessory unit is mounted on the tool and the battery pack is mounted on the accessory unit.

9. An accessory system according to any one of the preceding claims wherein the
15 accessory unit is a dust collection unit (40) for collecting dust generated by the operation of the tool.

10. An accessory system according to claim 9 wherein the dust collection unit (40) includes a fan and the motor (49) of the unit powers the fan so as to generate a dust
20 collecting airflow.

11. An accessory system according to claim 10 wherein the dust collection unit comprises a shroud (32) for collecting dust from the region of a tool or bit (32) of the tool, which shroud communicates with a filter housing, incorporating a filter, such that
25 an airflow generated by the fan passes into the shroud, into the filter housing and then into the fan.

12. An accessory system according to any one of the preceding claims wherein the battery pack (4) is mounted on the tool from a first direction with respect to a
30 longitudinal axis of the tool and is mounted on the accessory unit (40), when the accessory unit is mounted on the tool, from a second different direction with respect to the axis.

13. An accessory system according to any one of the preceding claims wherein the tool is a drilling and/or hammering tool.
14. An accessory system substantially as hereinbefore described with reference to
5 any one of the accompanying drawings.
15. An accessory unit (40) for a cordless hand held power tool which is releasably mountable on such a tool and comprises a separate motor (49) for powering the unit, characterised in that the accessory unit comprises a first interface (14, X) via which it
10 can be mechanically and electrically connected to such a tool and a second interface (64, W) via which it can be mechanically and electrically connected to a battery pack (4), which battery pack is for powering the motor of the accessory unit and, when the accessory unit is mounted on such a tool, for powering such a tool via the accessory unit.
- 15
16. An accessory unit according to claim 15 wherein the motor of the accessory unit is actuated when a tool to which the accessory unit is mounted is actuated.
17. An accessory unit according to claim 15 or claim 16 wherein one or each of the
20 interfaces comprises a rail and groove connection (28, 64) and releasable latch arrangement.
18. An accessory unit any one of claims 15 to 17 additionally comprising an electrical connection (XW) between the first and second interfaces, via which
25 electrical current is passed from a battery pack to a tool, when the accessory unit is mounted on a tool and a battery pack is mounted on the accessory unit.
19. An accessory unit according to any one of claims 15 to 18 wherein the
30 accessory unit is a dust collection unit (40) for collecting dust generated by operation of such a tool.
20. An accessory unit according to claim 19 wherein the dust collection unit (40) includes a fan and the motor (49) of the unit powers the fan so as to generate a dust collecting airflow.

21. An accessory unit according to claim 20 comprising a shroud (32) for collecting dust from the vicinity of a tool or bit (32) of a tool, which shroud communicates with a filter housing, incorporating a filter, such that an airflow generated by the fan passes into the shroud, into the filter housing and then into the fan.

5

22. An accessory unit substantially as hereinbefore described with reference to any one of Figures 4 to 6.

ABSTRACT**CORDLESS HAND HELD TOOL WITH POWERED ACCESSORY**

An accessory system, such as a dust collection system 40 of a hand held power tool, such as a drilling and/or hammering tool comprising, the tool, an accessory unit 41 comprising a separate motor for powering the unit and releasably mountable on the tool, and a battery pack 42. When the accessory unit is not required, the battery pack can be mounted directly on the tool for powering to tool and when the accessory unit is required the battery pack can be mounted on the accessory unit for powering the accessory unit and, when the accessory unit is mounted on the tool, for powering the tool via the accessory unit.

Figure 6.

N. Koolley
15/8/03

THIS PAGE BLANK (USPTO)

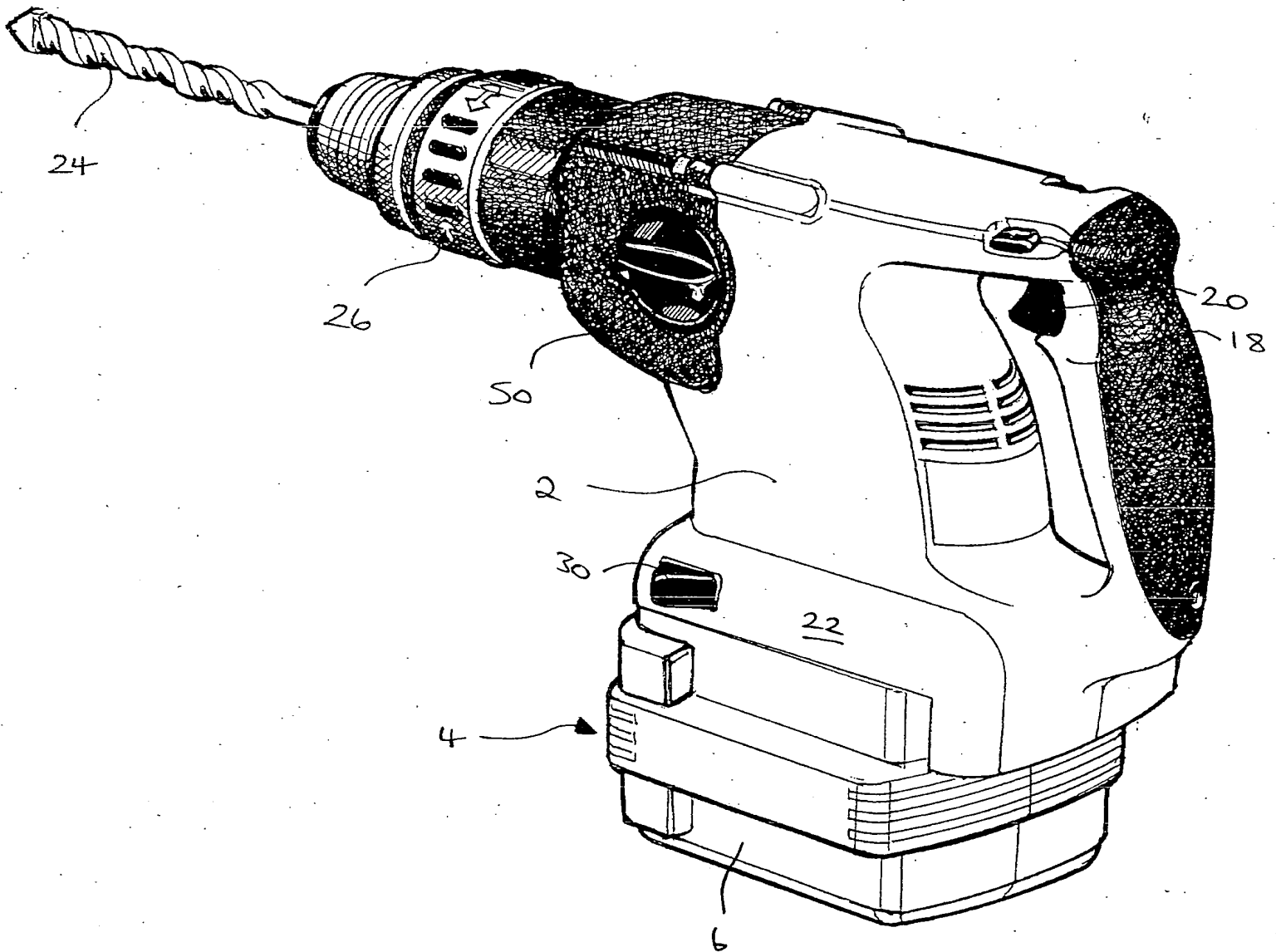


FIG. 1

THIS PAGE BLANK (USPTO)

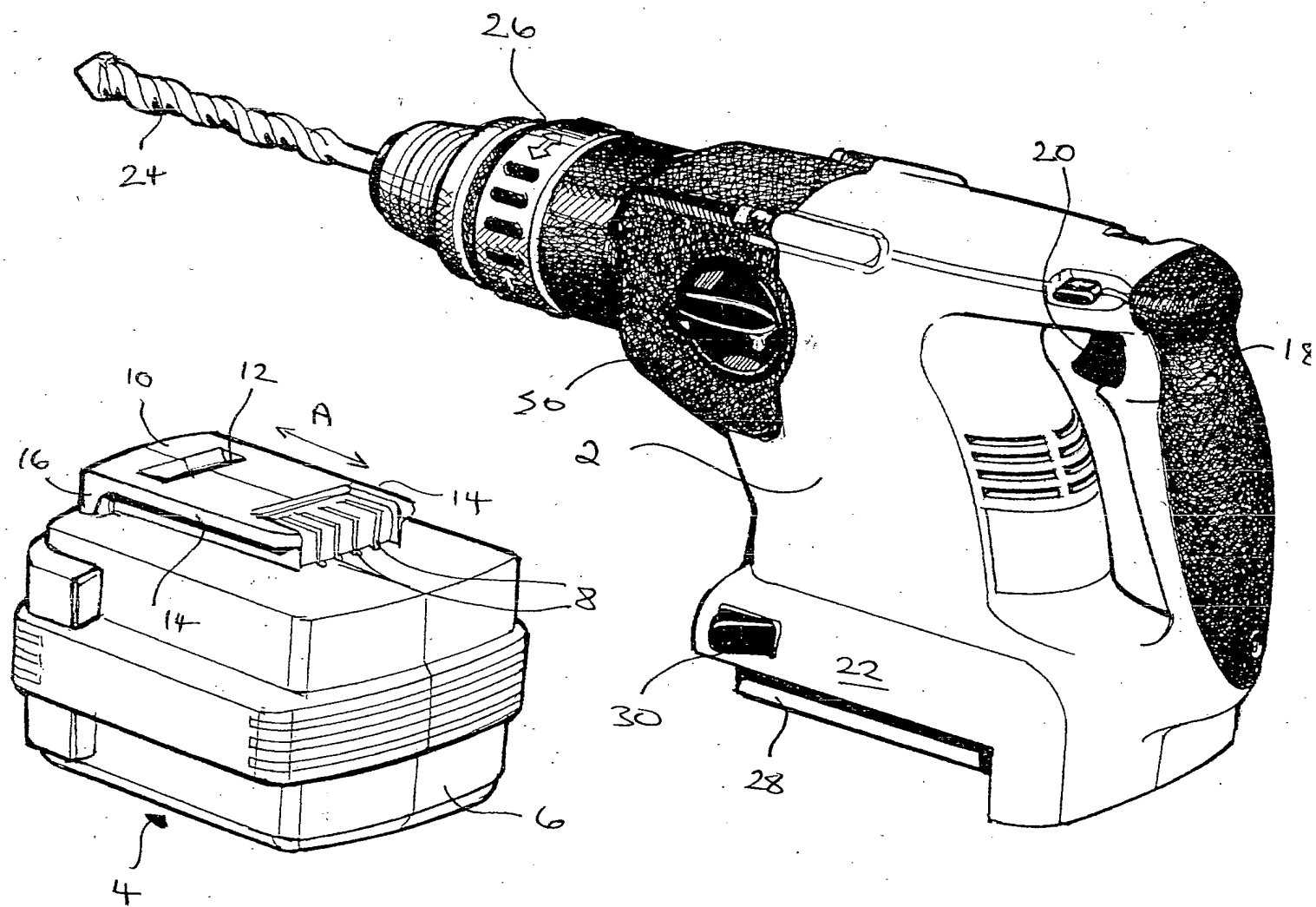
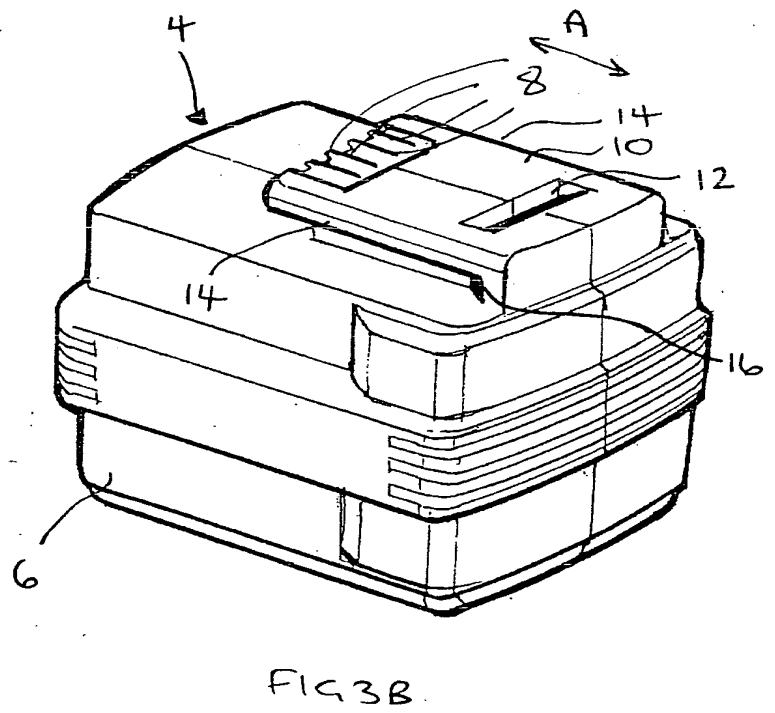
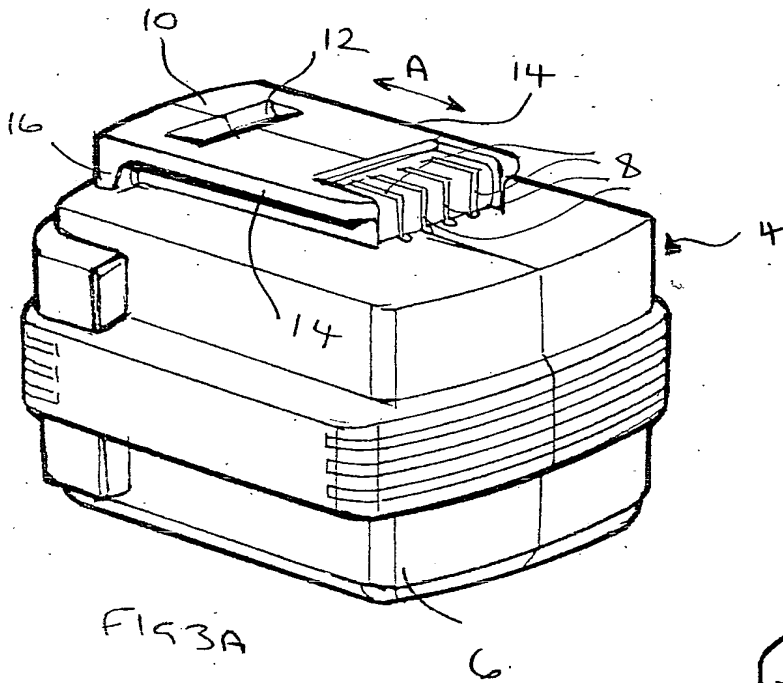


FIG 2

THIS PAGE BLANK (USPTO)



THIS PAGE BLANK (USPTO)

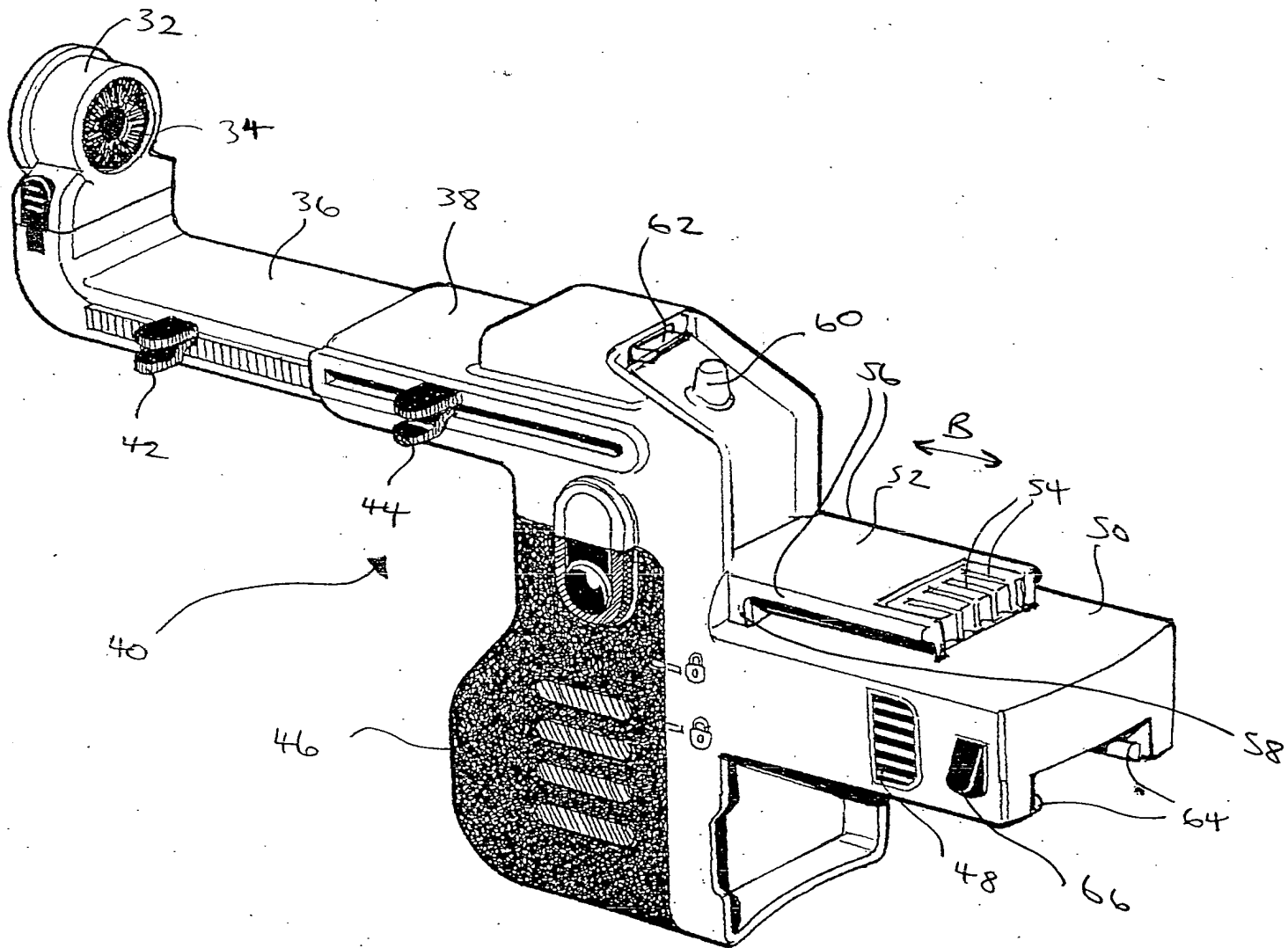
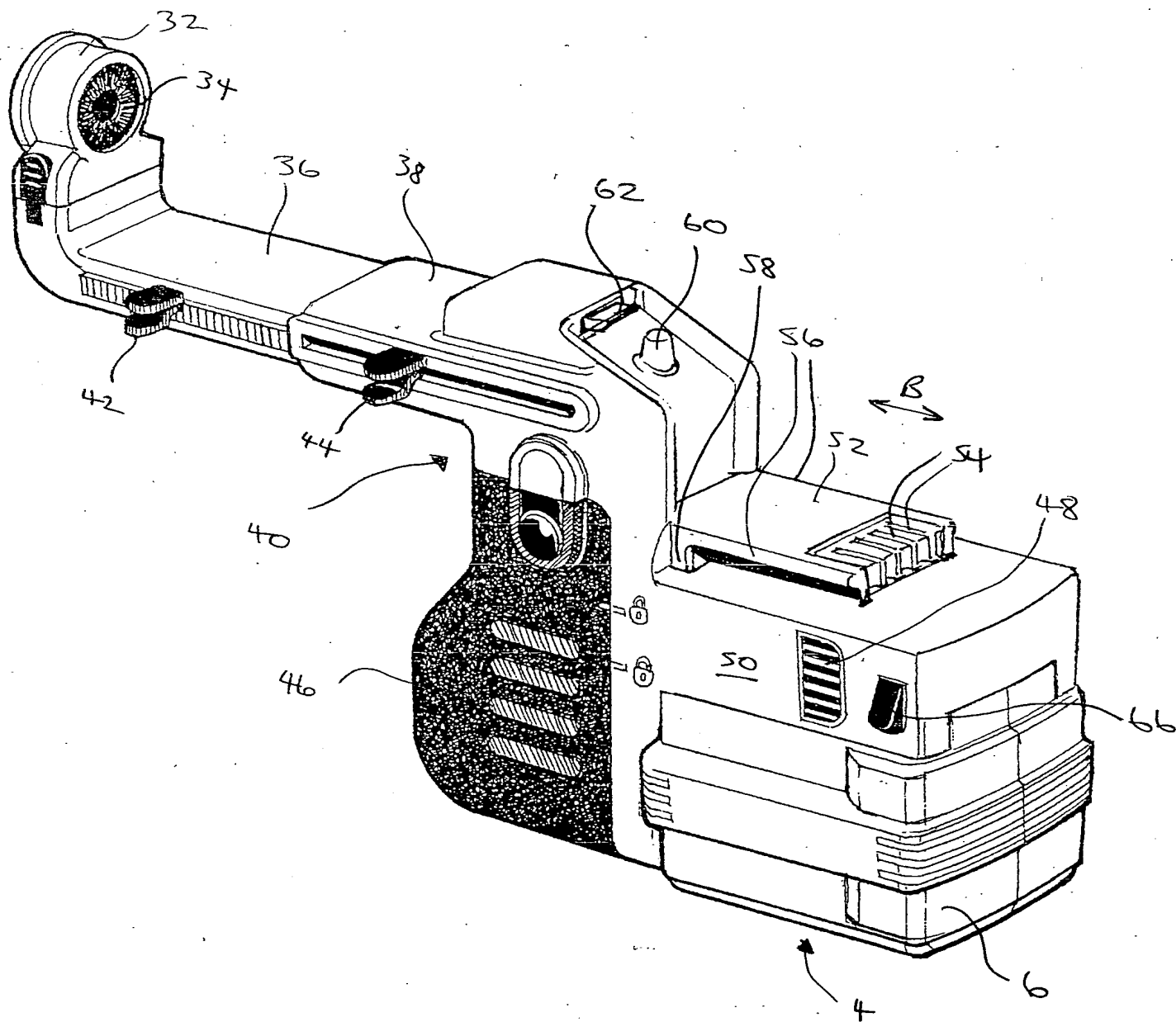


FIG 4

THIS PAGE BLANK (USPTO)



THIS PAGE BLANK (USPTO)

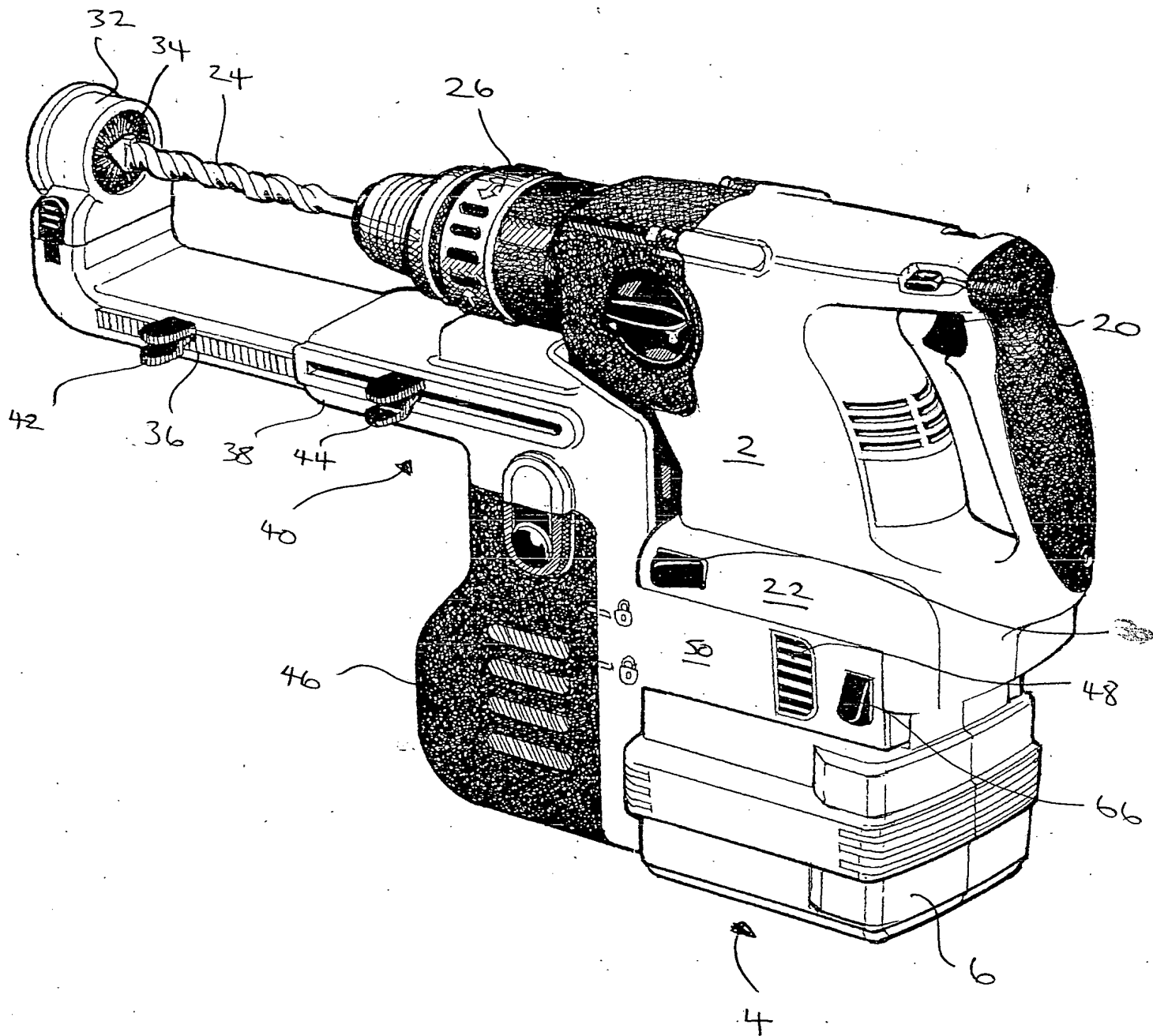
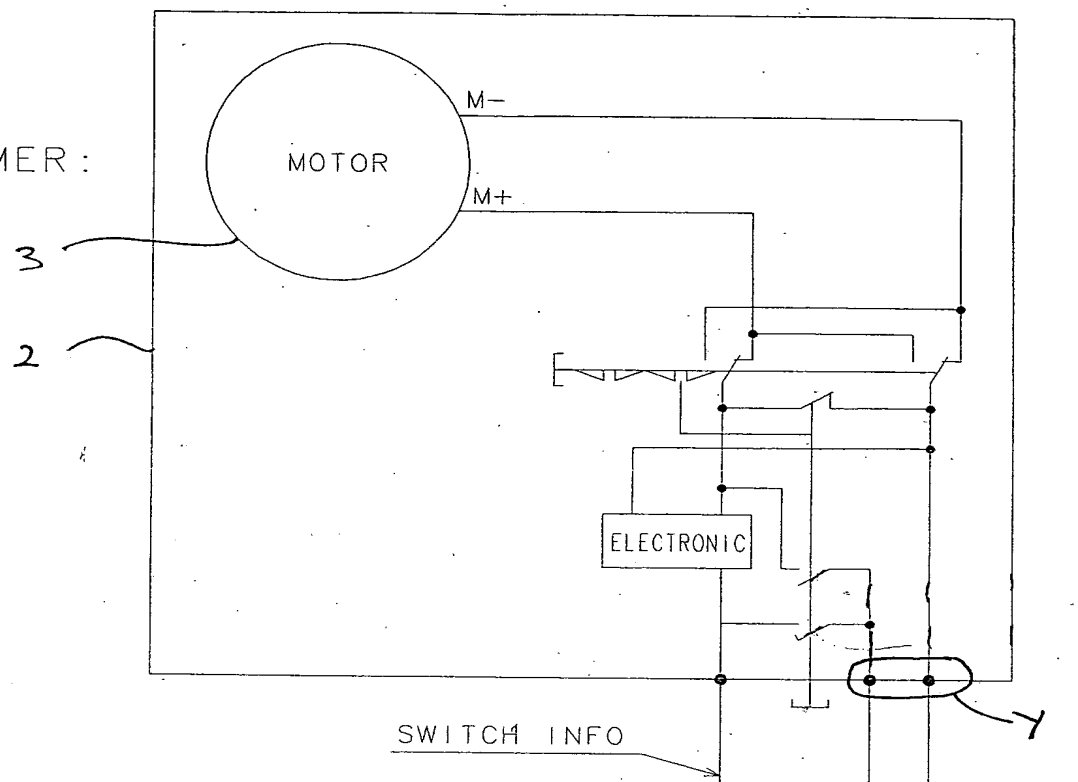


FIG. 6

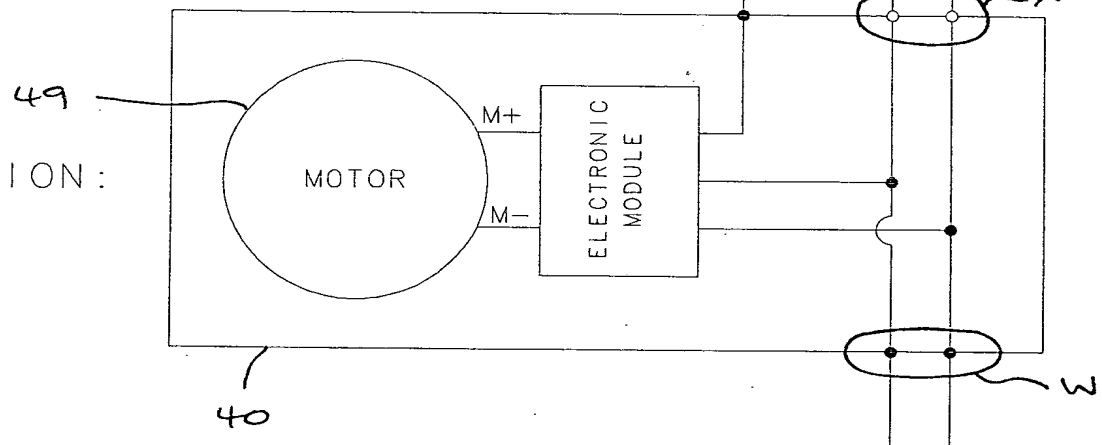
THIS PAGE BLANK (USPTO)

FIG 7

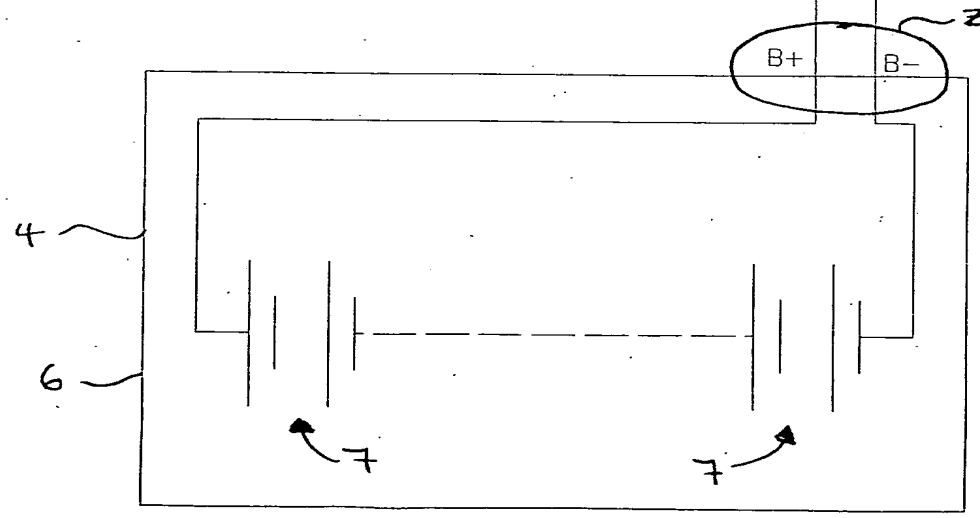
CORDLESS HAMMER:



DUST EXTRACTION:



BATTERY PACK:



THIS PAGE BLANK (USPTO)